REMARKS

Claims 3-28 and 30-33 are pending in this application. Claims 3 and 30 have been amended. Claims 1, 2 and 29 have been cancelled without prejudice or disclaimer. Claim 33 is added herein. Support for the amendment to claim 3 may be found in claim 2 as originally filed. Support for the amendment to claim 30 and for new claim 33 may be found in claim 3 as originally filed. Reconsideration is requested based on the foregoing amendment and the following remarks.

Claim Rejections - 35 U.S.C. § 102:

Claim 3 was rejected under 35 U.S.C. § 102(e) as anticipated by Seeger et al., US 6,577,762 (hereinafter "Seeger"). The rejection is traversed to the extent it would apply to the claims as amended.

Claim 3 recites, in pertinent part:

"the gray level difference is an amount which is calculated based on a difference between an average gray level of white pixels in the vicinity area of the target pixel and an average gray level of black pixels in the vicinity area of the target pixel."

Seeger neither teaches, discloses, nor suggests a gray level difference is an amount, which is calculated, based on a difference between an average gray level of white pixels in the vicinity area of the target pixel and an average gray level of black pixels in the vicinity area of the target pixel, as recited in claim 3. The passage to which the Office Action refers, at column 6, line 63 through column 9, line 17 of Seeger, rather, begins by describing,

> FIG. 8 illustrates a block variance image 800 of grey-scale image 100 shown in FIG. 1. The dark regions indicate low variance regions and the light regions indicate high variance regions. In general, the background pixels are typically represented by the low variance regions and the foreground pixels are represented by the high variance regions. This is based on the assumption that grey-scale values change slowly with position if a region is background. This is generally true if the text is printed on a page of uniform color and lighting variations are caused by diffuse shadows. Since text has sharp boundaries the variance of a region is typically larger that the background variance if the region includes edges of characters.

This passage of Seeger may be seen to describe a block variance image 800 of grey-scale image 100, rather than a gray level difference which is calculated based on a difference between an average gray level of white pixels in the vicinity area of the target pixel and an average gray level of black pixels in the vicinity area of the target pixel. A variance is not a

difference. Seeger says nothing at all here about calculating a gray level difference based on a difference between an average gray level of white pixels in the vicinity area of the target pixel and an average gray level of black pixels in the vicinity area of the target pixel, contrary to the assertion in the Office Action.

Seeger goes on to describe, at column 7, line 9-18,

> Referring back to FIG. 6, in box 603, a moving average of the block variance image V is computed by taking the mean of all possible windows of a specified size. The mean variance image V indicates whether the variance of a block is bigger or smaller than the average variance. If it is larger than the average variance then there is probably text in this region. So the window size determines over what area this average variance is computed. If this window is too small, then it's a poor measure of the average, if it is too big it does not reflect local changes accurately.

Similarly, this passage of Seeger, may be seen to describe computation of a moving average of the block variance image V by taking the mean of all possible windows of a specified size, rather than a gray level difference which is calculated based on a difference between an average gray level of white pixels in the vicinity area of the target pixel and an average gray level of black pixels in the vicinity area of the target pixel. A moving average of a block variance is not a difference, either. Seeger says nothing at all here about calculating a gray level difference based on a difference between an average gray level of white pixels in the vicinity area of the target pixel and an average gray level of black pixels in the vicinity area of the target pixel, contrary to the assertion in the Office Action.

Seeger goes on to describe, at column 7, line 19-39,

> For one embodiment of the present invention, the mean variance image V is based on a 15 by 15 pixel block moving average of block variance image V. This particular window size (e.g., 15 by 15 pixel block) was selected based upon experimental results. For alternative embodiments, the size of this window may vary. In general, the larger the window size, the smoother the block variance image V.
>
> Next, in box 604, a variance threshold surface V_t can be computed based on the following equation:
>
> $V_t = \alpha V + N$
>
> where, α is a constant and N represents an estimate of the variance due to noise in the background region. The constant .alpha. is determined empirically. For one embodiment of the present invention, .alpha.=0.3 and N=16 was used for an initial pass of the algorithm. In a second pass, N may be replaced with the average variance of the background. The average variance of the background is computed by taking the average of those pixels in block variance image V which

> correspond to the background regions (as determined by V_t). Box 608 illustrates the iterative updating of N.

Similarly, this passage of Seeger may be seen to describe computation of a variance threshold surface V_t, rather than a gray level difference which is calculated based on a difference between an average gray level of white pixels in the vicinity area of the target pixel and an average gray level of black pixels in the vicinity area of the target pixel. A variance threshold surface is not a difference, either. Seeger says nothing at all here about calculating a gray level difference based on a difference between an average gray level of white pixels in the vicinity area of the target pixel and an average gray level of black pixels in the vicinity area of the target pixel, contrary to the assertion in the Office Action.

Seeger goes on to describe, at column 7, lines 40-46,

> In box 605, the block average image I is segmented by thresholding the block variance image V with the variance threshold surface V_t. The variance threshold surface V_t is used to remove text regions from the block average image I. In other words, the block average image I is segmented into foreground and background regions based upon the variance threshold surface V_t and the block variance image V.

Similarly, this passage of Seeger may be seen to describe using variance threshold surface V_t to remove text regions from the block average image I, rather than a gray level difference which is calculated based on a difference between an average gray level of white pixels in the vicinity area of the target pixel and an average gray level of black pixels in the vicinity area of the target pixel. Seeger says nothing at all here about calculating a gray level difference based on a difference between an average gray level of white pixels in the vicinity area of the target pixel and an average gray level of black pixels in the vicinity area of the target pixel, contrary to the assertion in the Office Action.

Seeger goes on to describe, at column 7, lines 47-55,

> For example, if a pixel in the block variance image V is larger than a corresponding pixel in the variance threshold surface V_t then a corresponding pixel in the block average image I is designated as a foreground pixel, otherwise it is designated as a background pixel. All designated foreground pixels may be assigned a first value and/or all designated background pixels may be assigned a second value. For one embodiment of the present invention, all text regions are assigned a unique pixel value (e.g., 0).

Similarly, this passage of Seeger may be seen to describe designating pixels in the block average image I as foreground pixels or background pixels based on whether a pixel in the block variance image V is larger than a corresponding pixel in the variance threshold surface V_t, or

not, rather than a gray level difference which is calculated based on a difference between an average gray level of white pixels in the vicinity area of the target pixel and an average gray level of black pixels in the vicinity area of the target pixel. Seeger says nothing at all here about calculating a gray level difference based on a difference between an average gray level of white pixels in the vicinity area of the target pixel and an average gray level of black pixels in the vicinity area of the target pixel, contrary to the assertion in the Office Action.

Seeger goes on to describe, at column 7, lines 56-62,

> For one embodiment of the present invention, each pixel in the block average image I, the block variance image V_t and the variance threshold surface V_t corresponds to a pixel block (e.g., 7 by 7 pixel block) in the grey-scale image I. FIG. 9 illustrates a block average image 900 after applying the variance threshold V_t. Image 900 is segmented into text and background regions.

Similarly, this passage of Seeger may be seen to explain that each pixel in the block average image I, the block variance image V_t and the variance threshold surface V_t corresponds to a pixel block (e.g., 7 by 7 pixel block) in the grey-scale image I, rather than a gray level difference which is calculated based on a difference between an average gray level of white pixels in the vicinity area of the target pixel and an average gray level of black pixels in the vicinity area of the target pixel. Seeger says nothing at all here about calculating a gray level difference based on a difference between an average gray level of white pixels in the vicinity area of the target pixel and an average gray level of black pixels in the vicinity area of the target pixel, contrary to the assertion in the Office Action.

Seeger goes on to describe, at column 7, lines 63 to column 8, line 8,

> In box 606, a background image B is obtained by replacing pixel values in a block average image I, labeled as foreground (or text) regions with interpolated values. For one embodiment of the present invention, a block average image I is interpolated linearly along rows and columns using neighboring background regions. The final result is obtained by averaging the row and column interpolates. For alternative embodiments, rather than using linear interpolation, it is possible to fit a smooth surface to the existing data points. In this way, smoothness constraints can be incorporated to reduce the high frequency contribution of text caused by false segmentation. FIG. 10 illustrates a background image 1000 for the grey-scale image 100.

Similarly, this passage of Seeger may be seen to describe interpolating block average image I linearly along rows and columns using neighboring background regions, rather than a gray level difference which is calculated based on a difference between an average gray level of white pixels in the vicinity area of the target pixel and an average gray level of black pixels in the vicinity area of the target pixel. Seeger says nothing at all here about calculating a gray level

difference based on a difference between an average gray level of white pixels in the vicinity area of the target pixel and an average gray level of black pixels in the vicinity area of the target pixel, contrary to the assertion in the Office Action.

Seeger goes on to describe, at column 8, lines 9-16,

> In box 607, the background image B is then upsampled to increase the resolution to match the resolution of the original grey-scale image I. For example, the background image B is upsampled by a factor of 7 in each direction when using 7 by 7 pixel blocks to compute the block average image I. For one embodiment of the present invention, the background image B is upsampled using bilinear or bicubic interpolation by the block size.

Similarly, this passage of Seeger may be seen to describe upsampling the background image B to increase the resolution to match the resolution of the original grey-scale image I, rather than a gray level difference which is calculated based on a difference between an average gray level of white pixels in the vicinity area of the target pixel and an average gray level of black pixels in the vicinity area of the target pixel. Seeger says nothing at all here about calculating a gray level difference based on a difference between an average gray level of white pixels in the vicinity area of the target pixel and an average gray level of black pixels in the vicinity area of the target pixel, contrary to the assertion in the Office Action.

Seeger goes on to describe, at column 8, lines 17-23,

> For one embodiment of the present invention, the background image B generated by logic flow diagram 600 is then used for determining the offset value(s) d in accordance with box 502 and thresholding the grey-scale image I in accordance with box 503. The binary image 400 illustrates the results of applying the background surface thresholding method described above.

Similarly, this passage of Seeger may be seen to describe using the background image B generated by logic flow diagram 600 for determining the offset value(s) d in accordance with box 502 and thresholding the grey-scale image I in accordance with box 503, rather than a gray level difference which is calculated based on a difference between an average gray level of white pixels in the vicinity area of the target pixel and an average gray level of black pixels in the vicinity area of the target pixel. An offset value is not a difference. Seeger says nothing at all here about calculating a gray level difference based on a difference between an average gray level of white pixels in the vicinity area of the target pixel and an average gray level of black pixels in the vicinity area of the target pixel, contrary to the assertion in the Office Action.

Seeger goes on to describe, at column 8, lines 24-31,

> It should be noted that boxes 601, 602, 603, 604 and 605 represent the initial

> segmentation of the grey-scale image I into foreground and background regions. For alternative embodiments of the present invention, the initial segmentation of grey-scale image/may be performed using a histogram analysis of the variance to determine the variance threshold, edge or high frequency detection, or any other segmentation technique.

Similarly, this passage of Seeger may be seen to explain that boxes 601, 602, 603, 604 and 605 represent the initial segmentation of the grey-scale image I into foreground and background regions, rather than a gray level difference which is calculated based on a difference between an average gray level of white pixels in the vicinity area of the target pixel and an average gray level of black pixels in the vicinity area of the target pixel. Seeger says nothing at all here about calculating a gray level difference based on a difference between an average gray level of white pixels in the vicinity area of the target pixel and an average gray level of black pixels in the vicinity area of the target pixel, contrary to the assertion in the Office Action.

Seeger goes on to describe, at column 8, lines 32-39,

> For alternative embodiments of the present invention, the background thresholding technique described in logic flow diagrams 500 and 600 may be performed in an iterative manner. This can be accomplished by replacing the initial segmentation into text and background (using variance thresholds) with the output of the previous background surface thresholding result as shown by arrow 505 in FIG. 5.

Similarly, this passage of Seeger may be seen to explain that the background thresholding technique described in logic flow diagrams 500 and 600 may be performed in an iterative manner, rather than a gray level difference which is calculated based on a difference between an average gray level of white pixels in the vicinity area of the target pixel and an average gray level of black pixels in the vicinity area of the target pixel. Seeger says nothing at all here about calculating a gray level difference based on a difference between an average gray level of white pixels in the vicinity area of the target pixel and an average gray level of black pixels in the vicinity area of the target pixel, contrary to the assertion in the Office Action.

Seeger goes on to describe, at column 8, lines 40-50,

> The background surface thresholding techniques described above can be used to segment grey-scale images, color (e.g., based on red, green or blue or cyan, magenta or yellow) images, and any other type of pixmap image. In other words, the background thresholding techniques described by the logic flow diagrams 500 and 600 can be applied to grey-scale images and color images. However, when binarizing color images in accordance with the background thresholding techniques described in logic flow diagrams 500 and 600 some additional processing may be required.

Similarly, this passage of Seeger may be seen to explain that the background surface

thresholding techniques described above can be used to segment grey-scale images, color (e.g., based on red, green or blue or cyan, magenta or yellow) images, and any other type of pixmap image, rather than a gray level difference which is calculated based on a difference between an average gray level of white pixels in the vicinity area of the target pixel and an average gray level of black pixels in the vicinity area of the target pixel. Seeger says nothing at all here about calculating a gray level difference based on a difference between an average gray level of white pixels in the vicinity area of the target pixel and an average gray level of black pixels in the vicinity area of the target pixel, contrary to the assertion in the Office Action.

Seeger goes on to describe, at column 8, lines 51-56,

> For example, the luminance of a color image can be computed before applying the background surface thresholding technique. Alternatively, the background thresholding technique can be applied to each color channel separately so that the results of each channel can be combined in some manner, for example by AND-ing or OR-ing.

Similarly, this passage of Seeger may be seen to explain that the luminance of a color image can be computed before applying the background surface thresholding technique, rather than a gray level difference which is calculated based on a difference between an average gray level of white pixels in the vicinity area of the target pixel and an average gray level of black pixels in the vicinity area of the target pixel. Seeger says nothing at all here about calculating a gray level difference based on a difference between an average gray level of white pixels in the vicinity area of the target pixel and an average gray level of black pixels in the vicinity area of the target pixel, contrary to the assertion in the Office Action.

Seeger goes on to describe, at column 8, lines 57 to column 9, line 6,

> The binary image may be further enhanced by performing additional image processing techniques on the grey-scale image prior to performing the background surface thresholding techniques described above. For example, a de-blurring technique used to partially restore the degradations of the image due to camera or motion blur may precede the background threshold surfaces techniques. Although there are numerous de-blurring techniques available, a sharpening technique described in "Fundamentals of Digital Image Processing", Anil K. Jain, pp. 249-250, (1989) or FIR filtering technique which assumes a Gaussian point spread function (PSF) described in "Small Convolution Kernels for High-Fidelity Image Restoration", S. Reichenbach and S. Park, IEEE Trans. Signal Processing 39(10), (1991) are generally sufficient if the PSF cannot be determined accurately. These techniques yield good results and are computationally efficient.

Similarly, this passage of Seeger may be seen to explain that binary image may be further enhanced by performing additional image processing techniques on the grey-scale image

prior to performing the background surface thresholding techniques described above, rather than a gray level difference which is calculated based on a difference between an average gray level of white pixels in the vicinity area of the target pixel and an average gray level of black pixels in the vicinity area of the target pixel. Seeger says nothing at all here about calculating a gray level difference based on a difference between an average gray level of white pixels in the vicinity area of the target pixel and an average gray level of black pixels in the vicinity area of the target pixel, contrary to the assertion in the Office Action.

Finally, Seeger goes on to describe, at column 9, lines 7-17,

> Upsampling is another technique that may be used to enhance the grey-scale image prior to performing background surface thresholding. Upsampling prior to binarization helps to trade grey-scale resolution for spatial resolution. Upsampling may be performed by bilinear or bicubic upsampling of the grey-scale image by a factor of 3 or other upsampling methods such as edge preserving interpolation schemes. An example of such an edge preserving interpolation scheme is disclosed in Allebach, J. P., and Wong, P. W., "Edge directed interpolation", in Proceedings of IEEE International Conference on Image Processing, ICIP-96, September 1996, Lausanne, Switzerland, pp. 707-710.

Finally, this passage of Seeger may be seen to explain that upsampling may be used to enhance the grey-scale image prior to performing background surface thresholding, rather than a gray level difference which is calculated based on a difference between an average gray level of white pixels in the vicinity area of the target pixel and an average gray level of black pixels in the vicinity area of the target pixel. Seeger says nothing at all here about calculating a gray level difference based on a difference between an average gray level of white pixels in the vicinity area of the target pixel and an average gray level of black pixels in the vicinity area of the target pixel, contrary to the assertion in the Office Action.

Claim 3 is submitted to be allowable. Withdrawal of the rejection of claim 3 is earnestly solicited.

<u>Claims 4-10, 12, 13, 15-28, 30, 31, and 32:</u>

Claims 4-10, 12, 13, 15-28, 30, 31, and 32 were rejected under 35 U.S.C. § 102(b) as anticipated by Hongo <u>et al.</u>, US 4,903,316 (hereinafter "Hongo"). The rejection is traversed to the extent it would apply to the claims as amended.

Independent claims 4, 23, 26, 31 and 32 of the invention are directed to determining, for each target pixel, whether the target pixel is a background pixel and to locally binarizing the target pixel by determining whether the target pixel belongs to the background or a stroke the and outputting a binary image if the target pixel is not a background pixel. That is, a

determination is made whether the pixel is a background pixel or a stroke pixel *before* performing a local binarization process and *then* the local-binarization is performed depending on whether the target pixel is determined to be in the background. By determining whether a target pixel is a background pixel prior to the local binarization process, the occurrence of a black and white flickering type noise can be suppressed at a low calculation cost (see application page 6, lines 20-23).

Claim 4, in particular, recites:

" locally binarizing the target pixel, judging which of a background and a stroke the target pixel belongs to, and outputting a binary image if it is judged that the target pixel is not the background pixel."

Hongo neither teaches, discloses, nor suggests locally binarizing the target pixel, judging which of a background and a stroke the target pixel belongs to, and outputting a binary image if it is judged that the target pixel is not the background pixel, as recited in claim 4. The passage to which the Office Action refers, at column 8, lines 10-17 of Hongo, rather, describes,

> As shown in FIG. 19, a target subwindow WS_0 and eight surrounding subwindows WS_1 -WS_7 disposed around the target subwindow are formed such that each of the subwindows has 3 X 3 pixels and binarizing is performed on the basis of a judgement as to whether each pixel is a character line pixel. A target pixel is a character line pixel when the following two conditions are satisfied.

Thus, Hongo is describing performing binarization on the basis of a judgement as to whether each pixel is a character line pixel or not, i.e. the judgment is part of the binarization process. This is to be contrasted with claim 4, in which a judgement is made as to whether a target pixel belongs to the background or a stroke beforehand, and *then* a binary image is output *if* it is judged that the target pixel is not the background pixel.

The Office Action finds this statement, made in the Remarks filed previously on October 28, 2004, to mean that the determination is made prior to binarization. It's unclear how performing binarization on the basis of a judgement as to whether each pixel is a character line pixel amounts to judging whether a target pixel belongs to the background or a stroke, and *then* a binary image is output *if* it is judged that the target pixel is not the background pixel, as recited in claim 4. Further reconsideration of the rejection of Independent claims 4, 23, 26, 31 and 32 is therefore requested respectfully.

Furthermore, the Abstract of Hongo describes,

> A binarizing apparatus used for optical character readers or character-and-graphic input devices, in which a sharp binary image can be obtained even from

> low-contrast character lines (or line segments) by discriminating a line graphic from stains wider than the character lines or from blurs in the background thereof. Eight surrounding subwindows are disposed around a target subwindow enclosing a target pixel, the surrounding subwindows being separated from each other at a distance larger than the character line width, and each of the subwindows having 3.times.3 pixels. The average density value of the respective subwindow is calculated to thereby compare the respective density values of the target subwindow and each surrounding subwindow or compare the density values of the respective surrounding subwindows. Consequently, whether the target pixel belongs to character line or whether it does not belong thereto, is judged to thereby perform binarizing.

Here, again, Hongo describes literally, "Consequently, whether the target pixel belongs to character line or whether it does not belong thereto, is judged to thereby perform binarizing." Thus, Hongo performs binarizing based on whether the target pixel belongs to character line or not, i.e. the judgment is part of the binarization process. This is to be contrasted with claim 4, in which a judgment is made as to whether a target pixel belongs to the background or a stroke beforehand, and *then* a binary image is output *if* it is judged that the target pixel is not the background pixel. Claim 4 is thus submitted to be allowable. Withdrawal of the rejection of claim 4 is earnestly solicited.

Claims 5-10, 12, 13, and 15-22 depend from claim 4 and add further distinguishing elements. Claim 15, for example, emphasizes that a fixed shape line element mask is used for line restriction. Claims 5-10, 12, 13, and 15-22 are thus also submitted to be allowable. Withdrawal of the rejection of claims 5-10, 12, 13, and 15-22 is also earnestly solicited.

Claims 23-25:

Claim 23 recites:

"locally binarizing the target pixel, judging which of a background and a stroke the target pixel belongs to and outputting a binary image if it is judged that the target pixel is not the background pixel."

Hongo neither teaches, discloses, nor suggests locally binarizing the target pixel, judging which of a background and a stroke the target pixel belongs to and outputting a binary image if it is judged that the target pixel is not the background pixel, as discussed above with respect to the rejection of claim 4. Claim 23 is thus submitted to be allowable for at least those reasons given above with respect to the rejection of claim 4. Withdrawal of the rejection of claim 23 is earnestly solicited.

Claims 24 and 25 depend from claim 23 and add further distinguishing elements. Claims

24 and 25 are thus also submitted to be allowable. Withdrawal of the rejection of claims 24 and 25 is also earnestly solicited.

Claims 26-28:

Claim 26 recites:

"locally binarizing the target pixel, judging which of a background and a stroke the target pixel belongs to and outputting a binary image if it is judged that the target pixel is not the background pixel."

Hongo neither teaches, discloses, nor suggests a local binarization device locally binarizing the target pixel, judging which of a background and a stroke the target pixel belongs to, and outputting a binary image if it is judged that the target pixel is not the background pixel, as discussed above with respect to the rejection of claim 4. Claim 26 is thus submitted to be allowable for at least those reasons given above with respect to the rejection of claim 4. Withdrawal of the rejection of claim 26 is earnestly solicited.

Claims 27 and 28 depend from claim 26 and add further distinguishing elements. Claims 27 and 28 are thus also submitted to be allowable. Withdrawal of the rejection of claims 27 and 28 is also earnestly solicited

Claims 30:

Claim 30, as amended, recites:

"the gray level difference is an amount which is calculated based on a difference between an average gray level of white pixels in the vicinity area of the target pixel and an average gray level of black pixels in the vicinity area of the target pixel."

Seeger neither teaches, discloses, nor suggests a gray level difference is an amount, which is calculated, based on a difference between an average gray level of white pixels in the vicinity area of the target pixel and an average gray level of black pixels in the vicinity area of the target pixel, as discussed above with respect to the rejection of claim 3.

Hongo was not asserted to teach, disclose, or suggest a gray level difference is an amount, which is calculated, based on a difference between an average gray level of white pixels in the vicinity area of the target pixel and an average gray level of black pixels in the vicinity area of the target pixel, as recited in claim 30. Claim 30 is thus submitted to be allowable for at least those reasons given above with respect to the rejection of claim 3. Withdrawal of the rejection of claim 30 is earnestly solicited.

Claims 31:

Claim 31 recites:

"local binarization means for locally binarizing the target pixel, judging which of a background and a stroke the target pixel belongs to, and outputting a binary image if it is judged that the target pixel is not the background pixel."

Hongo neither teaches, discloses, nor suggests locally binarizing the target pixel, judging which of a background and a stroke the target pixel belongs to, and outputting a binary image if it is judged that the target pixel is not the background pixel, as discussed above with respect to the rejection of claim 4. Claim 31 is thus submitted to be allowable for at least those reasons given above with respect to the rejection of claim 4. Withdrawal of the rejection of claim 31 is earnestly solicited.

Claims 32:

Claim 32 recites:

"locally binarizing the target pixel, judging which of a background and a stroke the target pixel belongs to and outputting a binary image if it is judged that the target pixel is not the background pixel."

Hongo neither teaches, discloses, nor suggests locally binarizing the target pixel, judging which of a background and a stroke the target pixel belongs to, and outputting a binary image if it is judged that the target pixel is not the background pixel, as discussed above with respect to the rejection of claim 4. Claim 32 is thus submitted to be allowable for at least those reasons given above with respect to the rejection of claim 4. Withdrawal of the rejection of claim 32 is earnestly solicited.

New Claim 33:

New claim 33 recites, inter alia, a gray level difference calculated based on a difference between an average gray level of white pixels in the vicinity area of the target pixel and an average gray level of black pixels in the vicinity area of the target pixel. None of the cited references teach, disclose, or suggest a gray level difference calculated based on a difference between an average gray level of white pixels in the vicinity area of the target pixel and an average gray level of black pixels in the vicinity area of the target pixel. Claim 33 is thus believed to be allowable.

Allowable Subject Matter:

The Applicant acknowledges with appreciation the allowance of claims 11 and 14.

Conclusion:

Accordingly, in view of the reasons given above, it is submitted that all claims 3-28 and 30-33 are allowable over the cited references. There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

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